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MISSOURI RIVER BASIN INVESTIGATIONS

LAND PLANNING AND CLASSIFICATION REPORT

as Relates to the Public Domain Lands

in the

HEART RIVER BASIN

NORTH DAKOTA

(FOR ADMINISTRATIVE USE ONLY)

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ACKNOWLEDGEMENTS

This report includes data and information gathered from many sources, the bulk of which consists of published reports of the State Experiment Station, the State Extension Service, the State Engineer's Office and the State Water Conservation Board of North Dakota, the Bureau of Reclamation, the U. S. Weather Bureau, U. S. Geological Survey, Soil Conservation Service, Bureau of Agricultural Economics, Bureau of Chemistry and Soils, Bureau of the Census and the Production and Marketing Administration. The county offices and records of the District Land offices were the source of information on the land ownership. Local residents, ranchers and farmers assisted materially in furnishing information on local conditions.

The field work was done by L. A. Merryfield, Range Examiner, who examined each of the public domain tracts and the area in general. The report was written and map prepared by L. A. Merryfield and Albert Shunk, under the supervision and direction of R. D. Nielson, Land Economist.

PURPOSE AND SCOPE

The purpose of this study has been to ascertain the basic facts pertinent to the formulation of a sound and feasible program for intelligent action in the disposal or management of the remaining unappropriated, unreserved public domain lands in the drainage basin of the Heart River in North Dakota. With the development of the land and water resources of the Missouri River Basin, it is important to know how the public lands can best be fitted into the coordinated program. The very small acreage of public domain lands in the Heart River basin can have but little influence on the total economy of the area. However, their existence poses definite problems which require attention.

The land classification and study has been limited to the public domain lands and to such surrounding areas as may influence the use, development and management of the public lands.

SUMMARY

The Heart River drainage comprises 3,865 square miles in Billings, Stark, Hettinger, Oliver, Grant and Morton Counties in the west central part of North Dakota, and includes the drainage of the Heart River and its tributaries. This river rises in the hilly country in Billings County and flows in an easterly direction for approximately 150 miles, emptying into the Missouri River at Mandan, North Dakota. This area lies in the cretaceous table lands of the Great Central Plains region and have no outstanding physiographic features. The elevation ranges from 1,620 feet at Mandan to 2,940 feet in the Killdeer Mountains. The lands to be irrigated under the Reclamation program include areas along the Heart River Valley amounting to about 13,500 acres, none of which are public domain. The basin is smooth, rolling prairie with an occasional small area of badlands and some steep escarpments along the edges of the basin.

This area lies west of the 100th meridian and the climate is semi-arid. The average annual rainfall is 15.72 inches, sixty-nine percent of which falls during the growing season. The maximum temperature recorded is 119 degrees and the minimum is minus 48 degrees; the average growing season is 125 days with the longest at Mandan, 138 days, and the shortest at New England, 117 days. The lowest annual precipitation was seven inches in 1936 and the highest was twenty-four inches in 1944.

The vegetative cover is the shortgrass type; the principal species being blue grama, niggerwool, western and slender wheatgrass, Junegrass and bluegrass and averages 2.3 acres per animal unit month. The soils along the Heart River and its drainages are formed from alluvial deposits and are generally medium in texture, ranging from sandy loam to a friable, silty clay; are easily drained, and contain no appreciable salt accumulations. The soils of the terraces and benches are residual in character, being formed from the sandstones, shales and clays of the Fort Union formations, and belong to the Morton and Williams soil series.

There are 742 acres of public domain in the basin, 278 of which are classed as shortgrass grazing lands, 304 as waste lands and 160 as barren sand bars along the Missouri River; 703 acres are not under any form of lease and 39 acres are under grazing lease.

The public domain lands are in nine separate, widely scattered tracts ranging in size from 10 to 464 acres, and are all surrounded by private lands. The small percentage of public lands will exert no significant influence on the total area economy or development program. Seven of the nine tracts are being used as grazing lands and are, generally, within fenced pastures.

GENERAL DESCRIPTION OF
HEART RIVER AREA

LOCATION AND SIZE

The Heart River unit includes the area which is drained by the Heart River. It lies between the Knife River drainage and the drainage of the Cannonball River in the southwest corner of North Dakota between 46° 18' and 47° 13' north latitude and between 100° 53' and 103° west longitude. The Heart River basin includes parts of Oliver, Morton, Stark, Hettinger and Grant Counties and comprises an area of 3,865 square miles.

The Heart River flows for approximately 150 miles from its source near Fryburg in Billings County, North Dakota to where it empties into the Missouri River at Mandan, Morton County, North Dakota. The widest part of this basin is west of Dickinson, where the Green River, Heart River and Antelope Creek form a drainage basin thirty-five miles in width. The Green and Heart Rivers join at Gladstone, and Antelope Creek in Stark County comes in eight miles further east; Muddy, Sweetbriar, Spring and a number of unnamed creeks enter the Heart River from the north, and Antelope Creek of Grant County comes in from the south a few miles east of the Heart Butte Reservoir site.

PHYSIOGRAPHY, TOPOGRAPHY AND GENERAL GEOLOGY

This project area is in the cretaceous table land area of the Great Central Plains region and has no outstanding physiographic features. The elevation ranges from 1,620 feet at Mandan to 2,940 on the divide in the Killdeer Mountains, between the Knife River and Heart River drainages.

The lands suitable for irrigation consist primarily of alluvial soils along the Heart River valley extending from Mandan to the Dickinson Reservoir site, and include 13,500 acres of irrigable lands which, according to the Bureau of Reclamation plans, will be served by one gravity diversion and fifty-seven individual pumping plants. These lands are subdivided into river bottom lands and terraced benches. The bottom lands occur in small tracts ranging from twenty to three hundred acres. There are larger irrigable tracts on the terraced benches which are to be furnished with irrigation water by the numerous proposed pumping plants.

The basin is characterized by smooth, rolling prairie lands, with an occasional small area of badlands where the Fort Union formation has been replaced by the Hell Creek and the Fox Hills formations. It is 120 miles long and averages about twenty-eight miles wide. The valley plain is bordered in many places by steep sandstone and shale escarpments which separate it from the prairie lands 50 to 150 feet above. The land in the valley is divided into small tracts by the meandering river swinging against the escarpments which often rise one hundred feet vertically. Trees and brush cover much of the bottom lands.

The principal drainages of this unit are the Heart River, Green River, Spring Creek, Muddy Creek, Sweetbriar Creek and Antelope Creek in Stark County and Antelope Creek in Morton County.

CLIMATOLOGICAL DATA

The area lies west of the 100th meridian and is in the semi-arid region where crop returns during the dry years may be very poor over the whole area; however, in relatively wet years, good crops may be general. Heavy snow storms, blizzards and prolonged cold spells make it necessary to provide shelter for livestock and to keep sufficient supplementary livestock feed on hand to take care of all the livestock during these emergency periods.

Table #1
Climatic Records as Shown at all Stations in the Area

Station	Years Operated	Days in Growing Season	Temperature Max.	Temperature Min.	Frost Free Days From	Frost Free Days To	Precipitation Growing Season	Total	Location
Corson	35	119	116	-43	5/20	9/16	12.21	15.68	S. E.
New England	40	117	114	-46	5/20	9/20	11.04	15.01	South
Mandan	30	138	115	-46	5/11	9/26	11.13	15.58	S. W.
New Salem	38	124	119	-45	5/20	9/21	10.87	15.88	West
Richardton	45	120	113	-48	5/14	9/26	11.51	15.90	W. Central
Dickinson	45	120	114	-47	5/20	0/17	11.91	16.05	N. Central
Fryburg	16	134	---	---	5/13	9/24	10.74	15.93	NW Central
Medora	19	125	115	-46	4/21	9/9	11.35	15.72	Extreme W.
Average	36	125	115	-46			11.35	15.72	

The lowest annual precipitation was seven inches in 1936 and the highest was twenty-four inches in 1944. The records show that sixty-nine percent falls as rain during the growing season--May through September.

VEGETATIVE COVER

This area is characterized by the short grass type of vegetation, the principal species are blue grama (Bouteloua gracilis), niggerwool (Carex filifolia), western wheatgrass (Agropyron smithii), slender wheatgrass (Agropyron pauciflorum), Junegrass (Koleria cristata), several species of blue grass (Poa) and, in the sandy area and badlands, there are small patches of sandgrass (Calomvilfa longifolia) and redgrass (Andropogan scoparius). Along the creeks there are several species of sage; (Artemisia cana, A. tridentata, A. pnaphaloides and A. frigida). Green sage (Artemisia discolor) is scattered throughout the area. Some shrubs, wild plum and chokecherry (Prunus), serviceberry (Amalanchier), buckbrush (Symphoricarpos) and wild rose (Rosa) are found along the Heart River and its tributaries.

SOILS

The soils of the river bottom lands and along the larger streams and the fans, which are formed when the tributaries enter the main streams, are alluvial loams and alluvial clay loams. These alluvial loams are characteristic in a narrow strip along Heart River, Little Heart River, Curlew Creek, Spring Creek and the Green River. Most of these alluvial soils are undifferentiated loam soils and undifferentiated clay soils.

Texture changes commonly occur within very short distances. In the western part of the unit, the soils of the terraces belong to the Morton soil series, sharply broken to rolling phase which merges into the Morton soils of the prairie lands, undulating to rolling phase. Around Zenith, Bellfield and Gaylord, the Morton clay loams and Morton clay is evident. A few spots of rough broken badlands are found north of Daglem; these soils are undifferentiated clays, shale and sand and cover approximately 3,500 acres. In the eastern part of the unit along Heart River, Little Heart River and Square Butte Creek, the alluvial loams, clay loams and sandy clay loams are the dominant soils. From these stream beds, the soils merge into the broken to sharply rolling phase of the Williams soils, and then to the rolling to undulating phase of the same soils and are characteristic of grassy prairies of this part of the area. 1/

ECONOMIC AND CULTURAL DEVELOPMENT

SETTLEMENT

The major part of the population of the Heart River basin is supported by farming and ranching and the activities associated therewith. The Northern Pacific Railroad employs 250 to 400 workmen on the line and at Mandan and Dickinson. There are a few local coal mines in the area that employ 50 to 100 men seasonally. Mandan and Dickinson employ 200 persons in small manufacturing industries, such as feeds, flour, beverages, ice and gas. The value of these products is estimated at three and one-half million dollars annually. 2/

Due to the low precipitation--slightly less than sixteen inches for the year--and the long, cold winters, the agriculture and grazing resources can support only a limited population under the present conditions. The following table shows the population of all the cities and towns in the basin.

1/ Reconnaissance Survey, Western North Dakota Sheet U. S. Department of Agriculture, Bureau of Soils.

2/ Rand McNally Agriculture Economics.

Table #2
Population of the Basin 3/

Almont	4	Glen Ullen	976	Price	9
Antelope	31	Harmon	12	Raleigh	140
Bellfield	870	Heil	5	Richardton	682
Brisbane	35	Hebron	1,267	Rosebud	9
Bluegrass	3	Heart	11	Sanger	12
Center	509	Henster	17	Snow	3
Curlew	6	Judson	100	Sweetbriar	7
Dickinson	5,839	Kurtz	17	Schefield	4
Eaglenest	5	Lark	3	Taylor	251
Elgin	583	LeFor	4	Ukraine	35
Fallon	7	Lehigh	7	William	125
Flasher	387	Leith	9	Willia	4
Fryburg	104	Mandan	6,685	Youngstown	75
Gaylord	50	New Hodac	85	Yucca	100
Gladstone	278	New Salem	875		
				Total	20,240

Total population of cities and towns	20,240
Total rural population not in cities or towns	5,638
Total population of area, 1940 census	25,878

The average population for the basin is 7.6 persons per square mile.

PUBLIC UTILITIES AND SERVICES

The main line of the Northern Pacific Railroad runs through this project area from Bismarck and Mandan on the east boundary; to Medora on the west boundary. The cities of Mandan, Dickinson and Richardton are the main railroad shipping points for the entire area. There are a number of smaller towns along the railroad which are shipping points for grain and livestock.

Transcontinental telephone and telegraph lines cross the area along the main line of the Northern Pacific Railroad and most of the inland towns are connected with the Bell System. Rural electrification reaches most of the farming area and additional lines are planned for areas not yet served. All the towns and ninety-five percent of the farms and ranches which do not have commercial electric connections have their own private plants.

U. S. Highway #10 crosses the area from Mandan to the west boundary near Medora. U. S. Highway #85 crosses the west end through Bellfield. State highways numbered 8, 22, 31 and 49 cross the area north and south. Good county roads connect all the ranches, farms and small settlements with the United States and State highway systems.

3/ Rand McNally 1946 Atlas.

There is a teachers' college at Dickinson and the U. S. Great Plains Field Experimental Station is located at Mandan. There are excellent high schools at Mandan, Dickinson, Richardton, Bellfield, Glen Ullen and New Salem, and there is an Indian school at Bismarck across the river from Mandan. All the small towns and settlements have adequate grade schools.

AREA ECONOMY

STOCK RAISING AND FARMING

Stock raising and farming are the most important industries of this area both from the point of persons employed and wealth produced. These industries have probably reached their maximum under present conditions. However, the irrigation of 14,318 acres below the Heart Butte Reservoir and near Dickinson as planned by the Reclamation Bureau will make the settlement of an additional eighty to one hundred families possible and materially increase the production of the project area and the number of livestock on the farms and ranches.

The number of livestock reported and the available feed appear to be well balanced with 3,148,980 animal unit months of feed required and 3,187,000 available. The winter climate in this section is considerably milder than that of eastern and northern North Dakota, and livestock can often range out most of the winter with light supplemental feeding. An average of 20 inches of snow falls during December, January, February and March with thaws occuring frequently during the winter. Range livestock are kept in the pastures and ranges from the first of April to the last of October normally, and fed at feed lots and farm pastures for the remainder of the year. Milk cows, horses and the small farm bands of sheep are summered and wintered in the ranch pastures and feed lots. Most of the cattle are run on a cow and calf basis; some operators feed the calves through the first winter and sell them as long yearlings. The horse population is decreasing as the farms become more mechanized.

The following table shows the average size of farms and ranches in the area, 1945 census:

Table #3

Population and Size of Farms and Ranches by Counties 4/ 5/

County	Square Miles	Population	Average Size Ranches, Farms
Mercer	1	- - -	- - -
Morton	1,105	9,398	695 Acres
Stark	1,255	8,730	676 Acres
Billings	216	1,700	797 Acres
Grant	558	4,240	725 Acres
Hettinger	271	1,810	846 Acres
Oliver	1,170	3,859	645 Acres
	4,576	29,737	4,384 Acres

4/ From United States Census of Agriculture-1945-Department of Commerce, Bureau of Census. Information is given for the entire county.

5/ From U. S. Statistical Abstracts - 1947

Table #4

Number of Livestock and Their Distribution According to the 1945 Census and Data Gathered in the Field 4/

County	Cattle No. Op.	Cattle No.	Cattle Av.	Sheep No. Op.	Sheep No.	Sheep Av.	Horses No. Op.	Horses No.	Horses Av.	Hogs No. Op.	Hogs No.	Hogs Av.
Billings	364	24485	67	39	2405	62	361	3412	9	282	2071	7
Grant	1147	46276	41	127	12777	101	1109	8270	7	1005	11836	12
Morton	1583	66929	43	145	8501	58	1516	11386	8	1362	14305	10
Hettinger	833	25729	31	62	6479	104	736	3667	5	646	5819	9
Stark	1188	41133	35	96	8261	86	1138	6326	6	1081	10364	10
Oliver	605	12216	20	47	5286	112	595	3844	6	553	5847	6
Total	5720	216768		516	43709		5455	36905		4929	50242	

Table #5

Feed Crop Production (Oats, Corn & Hay) 4/

County	Wild Tame & Hay Acres	Wild Tame & Hay Yield	Wild Tame & Hay T pr A.	Oats Acres	Oats Yield	Oats B pr A.	Corn Acres	Corn Yield	Corn B pr A.
Billings	7732	9535	1.23	8708	358612	41.1	5394	98886	18.3
Grant	19300	16600	.86	31126	1100250	35.2	29125	544566	18.7
Morton	99623	101999	1.02	48696	1967958	40.4	13990	284047	21.4
Hettinger	17900	15900	.89	22310	866350	38.8	18540	336612	18.1
Stark	33498	30767	.91	38924	1503106	38.6	29905	543204	18.1
Oliver	24415	35778	1.47	24542	1025792	41.8	3298	83430	21.4
Total	202468	210579		174306	6822068		100252	1890745	

Table #6

Merchantable Crops 4/

County	Spring Wheat Acres	Spring Wheat Bu.	Spring Wheat B pr A.	Winter Wheat Acres	Winter Wheat Bu.	Winter Wheat B pr A.	Flax Seed Acres	Flax Seed Bu.	Flax Seed B pr A.	Alfalfa Seed Acres	Alfalfa Seed Bu.	Alfalfa Seed B pr A.
Billings	39285	609466	15.5	---	----	----	1641	15132	9.2	40	52	1.3
Grant	177911	2613817	14.7	557	4692	18.4	4249	35930	8.5	64	80	1.3
Morton	215077	3655061	17.0	69	1050	15.2	6344	57323	9.1	172	314	1.24
Hettinger	100260	1333329	13.3	60	700	11.7	9336	94100	10.1	44	51	1.2
Stark	78895	897526	11.4	20	250	12.0	5001	47681	9.5	45	68	1.5
Oliver	75094	1279849	17.1	---	----	----	125	3010	24.0	88	86	.89
Total	686522	10389048		706	6692		26696	253176		453	651	

Table #7

Other Farm Feed Crops 4/

County	Acres	Bu.	B pr A.	Acres	Bu.	B pr A.	Acres	Bu.	B pr A.
Billings	99	6422	85.1	336	3312	9.8	9082	243423	26.9
Grant	378	26848	71.0	2536	20453	8.1	54621	1220580	22.4
Morton	660	48749	73.8	1175	11511	9.8	53805	1375742	25.6
Hettinger	193	15074	78.1	1678	18826	11.2	48878	1180662	24.2
Stark	428	29805	69.6	252	2524	10.0	47879	1289413	26.8
Oliver	228	16544	72.5	506	4915	9.7	18358	503501	27.4
Total	1986	145442		6483	61541		232623	5813321	

Table #8
Size and Type of Farms by Counties 6/

County	Average Size Stock Ranches (Acres)	Average Size Diversified Ranches (Acres)	Average Size All Ranches (Acres)	Average Size Truck Garden Ranches (Acres)
Billings	7,600	5,400	748	23
Grant	6,800	5,100	725	16
Morton	6,600	5,400	630	56
Hettinger	5,800	4,300	695	19
Stark	5,000	3,900	645	20
Oliver	5,600	2,600	645	15
Total	37,400	26,700	4,058	149

Nearly all of the crops raised in this area are raised on dry farms. However, there are a few small irrigated tracts along the Heart River, Spring Creek, Muddy Creek and both Antelope Creeks. These include mainly flood irrigated hay and meadow lands. However, there are small acreages of alfalfa, grain farm and truck gardens that are irrigated by gravity ditches.

The past several years have been very favorable for dry land farming and all but a few scattered tracts of county owned tax delinquent lands have been redeemed or sold and put back into production. This is reported to have been the most prosperous period of record for North Dakota. Bank clearances are at an all-time high, and the existing mortgage rate is very low. The ranches and farms are well improved and most of them are modernized. A general state of prosperity exists.

MINING

The mining activities of this project area are confined to the production of lignite coal. The 1945 year book of the Bureau of Mines shows that 26,560 tons of lignite coal were produced that year in Morton County, and employed 61 men. Lignite coal probably underlies most of the lands in the Heart River basin. The Geological Survey estimates that approximately 35% of the lignite coal in the United States lies under North Dakota. All public domain lands in this unit are embraced within a coal reserve.

MANUFACTURING

There are 18 manufacturing plants in the area, all of which are in Morton County, which employ 120 persons and produce manufactured products valued at $2,853,618.00 annually. These plants consist of flour and feed mills, building material plants and sheet iron and metal working shops. 7/

6/ Rand McNally Agriculture and Economic Atlas.

7/ 16th census of the United States Manufacturers Reports, Department of Commerce.

PUBLIC LAND PROGRAMS

There are no National Forests, National Parks or Monuments and no Indian Reservations within the Heart River Basin. The only public lands involved are those that have been withdrawn for reclamation purposes and the remaining 742 acres of public domain. Part of the area is embraced within state soil conservation districts, although here again the public land program is relatively insignificant because of the small acreage involved. Each of the several tracts of public domain lands have been classified in detail for the purpose of determining their highest use and most effective management. Due to the small number of these tracts, a general description of each is given below.

THE PUBLIC DOMAIN LANDS

The total area of public domain in the basin is 742 acres which are scattered over the area in nine separate tracts, the largest of which is 428 acres. The public lands are primarily valuable for the grazing of livestock, although they serve in their relative proportion as a part of the watershed and also as part of the wildlife habitat of the area.

Tract #1 - T. 134 N. Rge. 88 W.: Section 18: Lot 1 - 9.69 acres and
Tract #2 - T. 134 N. Rge. 88 W.: Section 30: Lot 1 - 11.48 acres.

These two lots are located on the broad divide between the drainage of Antelope Creek and Cannonball River and between two dry forks of Antelope Creek. They support a shortgrass cover of vegetation, of which blue grama comprises over 40%. Wheatgrasses, Junegrass, three-awn grass, redgrass, bluegrass and a few annual weeds and sagebrush make up the remainder of the composition. The estimated grazing capacity of both tracts is 10 animal unit months, or approximately 2 acres per AUM.

The topography of the two tracts is level to rolling with large boulders and rocks on the ridges. The soil is a light sandy clay loam that is well drained. The area is suited only to grazing and is in fair condition. There is no soil erosion problem on either of the tracts. Both lots are readily accessible and State Highway #21 crosses east and west on the north boundary of Lot 1 Section 30. The Northern Pacific Railroad also crosses this lot in an easterly and westerly direction.

The tracts are not under lease at the present time. There is no foreseeable need for these lands for any public use, and it is recommended that they be offered into public sale. The area is within the limits of the coal reserve, and the coal rights will therefore be reserved to the Federal government.

Tract #3 - T. 135 N. Rge. 81 W.: Section 6: Lot 6: NE¼SW¼ - 74.84 acres.

This tract is located on the divide between the drainages of the Heart and Cannonball Rivers. Most of it lies in the Heart River drainage. It

supports a shortgrass type of vegetation, of which blue grama comprises over 70%. Other species include niggerwool, porcupine grass, sandgrass, Junegrass, bluegrass and miscellaneous annual weeds. The average vegetation density is .35, and the total carrying capacity is estimated to be 31 animal unit months, or approximately 2¼ acres per AUM.

The topography is level to rolling, although there are numerous boulders scattered over the tract making cultivation impracticable. The soils are dark sandy loam of good texture and well drained. The tract is primarily valuable for grazing. It is fenced into three small pastures and is used in connection with adjoining lands, but is not under lease. It is being over-grazed by milk cows and farm horses, and is rapidly deteriorating in productivity and condition. There is a small seep in the southwest corner of Lot 6 which could be developed for stock watering purposes, although it is not necessary to the proper use and management of the area.

The tract lies within the limits of the coal reserve. It is readily accessible for grazing purposes, but serves no other use at this time, and there is no foreseeable need for its use in connection with any public land program. It is therefore recommended that it be offered into public sale as soon as possible.

Tract #4 - T. 135 N. Rge. 86 W.: Section 32: S½SE¼ - 80 acres.

This tract is located on the divide between Heart River and Louis Creek. It supports a shortgrass type of vegetation, of which blue grama makes up 40% of the composition. Other species include wheatgrass, sandgrass, three-awn grass, redgrass, bluegrass, miscellaneous annual weeds, and sagebrush. The soils are fine sand to sandy loam. Rocky knolls dominate the central part of the tract and sand duning is in evidence in portions of the area, especially on the north slopes. There is no water on the tract and no possibility of its development.

The tract is being used at the present time for grazing, although it is not under lease. The area is primarily valuable for grazing, it being too rough and sandy for cultivation. Wind erosion is a potential problem in the area, but under proper management, can be effectively controlled. There is no foreseeable use of this tract in connection with any public land program. The watershed significance is negligible, and its use as wildlife habitat is insignificant. It is recommended that this tract be offered into public sale. It lies within a coal reserve.

Tract #5 - T. 137 N. Rge. 80 W.: Section 27: Lot 1 - 1.2 acre.

This small tract is located along the boundary of the old Fort Lincoln military reservation. It is crossed by the Northern Pacific Railroad and State Highway #25. It supports a shortgrass type of vegetation. The soils are sandy loam and of good texture, and well drained.

The area is used for grazing in connection with adjoining lands. It is unleased. It is recommended that the tract be offered into public sale subject to rights-of-way and coal reserves in existence.

Tract #6 - T. 138 N. Rge. 85 W.: Section 2: Lot 1 - 38.79 acres.

This tract is located at the head of a dry fork of the Heart River and at the forks of an improved county road. It is unfenced. It supports a shortgrass type of vegetation, consisting mostly of blue grama and wheatgrasses. The average density is around .4. The soil is dark sandy clay loam of good texture.

The topography is level to rolling with slopes not exceeding 5%, but has large boulder out-croppings which make cultivation impracticable. However, approximately 10 to 15 tons of hay have been cut from a small portion of the area during each of the last few years. There is no permanent surface water on the tract, and the area is used for grazing purposes in connection with adjoining lands.

The tract is unleased at the present time. It is within the exterior boundary of the West Morton County Soil Conservation District. The area serves no other use except for production of forage and hay. There are no serious erosion problems, and it is insignificant insofar as its watershed values or wildlife habitat are concerned. There is no foreseeable need for this tract in connection with any public land management program. It is recommended that the tract be offered into public sale subject to coal reservations.

Tract #7 - T. 140 N. Rge. 89 W.: Section 6: Lot 4 - 61.13 acres.

This tract is located at the head of Little Muddy Creek. It supports a shortgrass type of vegetation, blue grama making up over 70% of its composition.

Its topography is rolling to undulating, sloping to the south on a grade of from 5 to 20%. Large boulder and rock out-croppings make it undesirable for farming. The soils belong to the Morton soil series and are dark brown sandy loams, well drained and of good texture.

This tract of public domain is within a fenced pasture, although it is not under lease. It is in excellent condition and is not over-grazed. There is no surface water on the area, but the tract is used in connection with water on adjacent lands. The tract is primarily valuable for grazing, and is insignificant insofar as its value for watershed and wildlife habitat are concerned.

There is no foreseeable need for its use in connection with any public land management program. It is recommended that it be offered into public sale, subject, of course, to coal reservations.

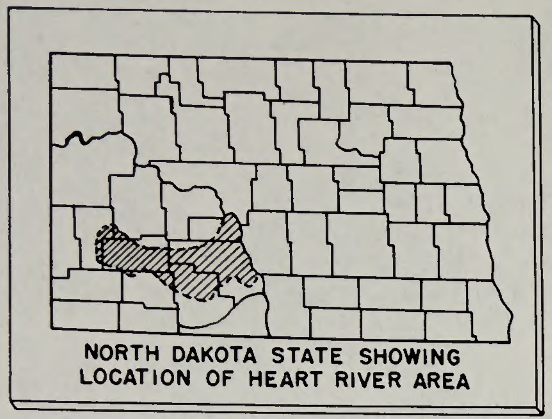
Tracts #8 and #9 - T. 144 N. Rge. 83 W. - That part of Sections 29 and 32 lying south of the Missouri River - Approximately 464 acres.

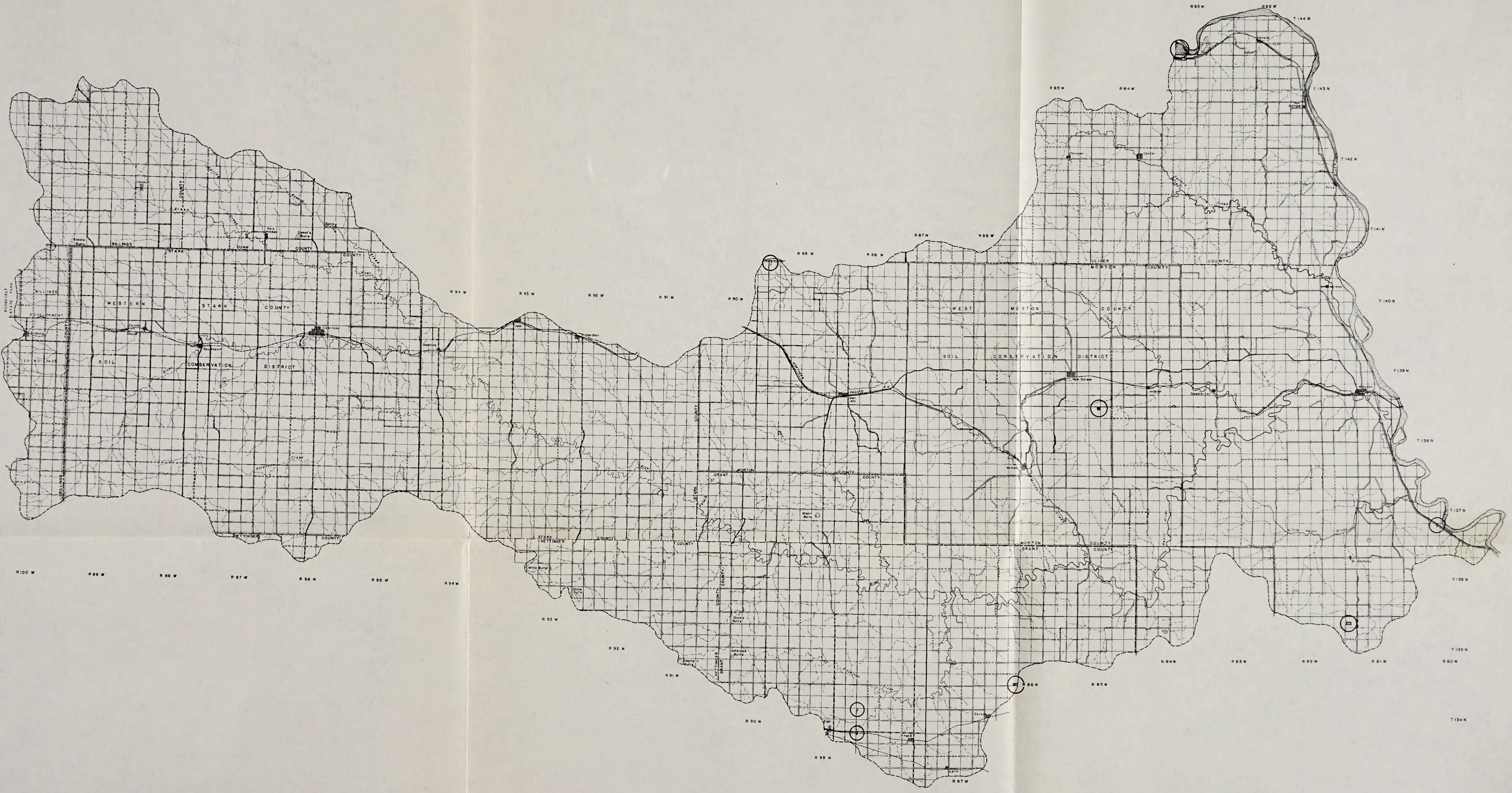
This area of public domain has developed largely as a result of accretions due to the gradual shifting of the Missouri River. The original public land in these sections comprised approximately 74.45 acres. Most of these accretion lands, approximately 300 acres, are river bottom lands covered with brush, trees and willows. They afford some feed and shelter for wildlife. It is possible that in the future, these lands may be valuable for agricultural purposes, depending upon the meandering of the river and consequent aggregation or degradation. The lands may be used in connection with the flood control program of the Army Engineers. They may also serve as valuable wildlife habitat in connection with state or Federal wildlife programs. The areas are of very little value for grazing purposes, and it is doubtful if there would be any demand for their acquisition for such purposes.

It is recommended that the area be retained in its present status, pending further developments for flood control, wildlife and other uses.

March 1948.

MISSOURI RIVER BASIN INVESTIGATIONS
BILLINGS, MONTANA


NORTH DAKOTA STATE SHOWING
LOCATION OF HEART RIVER AREA



LEGEND

LAND STATUS
Public Domain
Unappropriated and Unreserved
Under Grazing Lease or Permit
Not Under Grazing Lease or Permit

BOUNDARIES
Project Area
State
County
Township
Section
Ownership
Public Land Management Areas

TOPOGRAPHY
River
Permanent Stream
Intermittent Stream
Lake
Intermittent Lake
Butte

WORKS and STRUCTURES
Railroad
Hard Surfaced Road
Graveled Road
Improved Dirt Road
Unimproved Dirt Road
Towns
Buildings

1 1/2 0 1 2 3 4 5 MILES

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DIVISION OF LAND PLANNING

HEART RIVER AREA
PUBLIC LANDS MAP
NORTH DAKOTA

BILLINGS DRAFTING OFFICE FEBRUARY 1948

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